



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,691	09/10/2003	Alfred Chan Chung Tseung	1260.006US2	7514

21186 7590 09/20/2004

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

EASTHOM, KARL D

ART UNIT	PAPER NUMBER
----------	--------------

2832

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,691

Applicant(s)

TSEUNG ET AL.

Examiner

Karl D Easthom

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18 and 20-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 20-31, 34-37, and 40 is/are rejected.
- 7) ☒ Claim(s) 32,33,38 and 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2832

1. Claim 32 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 33.

When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). One of claims 32-33 must be cancelled as a duplicate claim to the other.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 18-24, 27-31 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Tosaki et al. The term “for monitoring carbon monoxide” is part of the preamble and is not afforded patentable weight here. For claims 20-22, Tosaki discloses the claimed invention at the sole Figure where on the line C-D is Ni₃₃, Co₆₆ and y has to be in the range because the compound is disclosed as a spinel, and applicant’s claims encompass the spinel form NiCo₂O₄. The ranges are met by division of the latter by 3 as explained by applicant in his remarks in parent 10/208601. Because the same composition is employed, carbon monoxide, if present, necessarily will decrease the resistance. For claim 23, electrodes are disclosed at col. 2, lines 35-40. The resistance is monitored as at TABLE 1, meeting claims 18-19, and 26, since current is a function of the resistance. Air is in contact with the thermistor. For claim 40, the reference element is one of the other thermistors of TABLE 1. For claims 27-31, how the device is made is not material where there is no evidence that the process limitations create distinct products. For alternatives to some of the product by process claims, see below.

Art Unit: 2832

4. Claims 18-24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando et al. The term "for monitoring carbon monoxide" is not given weight. Ando discloses the claimed invention at col. 3 lines 15-30 where the spinel form of $\text{NiCo}_{2.5}\text{O}_4$ is disclosed.

For claim 27, the metal nitrates are applied to a sapphire substrate, and there is decomposition by pyrolysis, see cols. 3-4. The resistance necessarily increases in the compound when CO is present as it must, since the same composition is employed.

5. Claims 18, 20-24, and 36-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Charkey et al. The term "for detecting carbon monoxide" is not given weight. Charkey discloses the claimed invention at the abstract where the spinel form of $\text{NiCo}_{2.5}\text{O}_4$ is disclosed, having graphite of claims 36-37. The resistance necessarily increases in the compound when CO is present as it must, since the same composition is employed.

6. Claims 18-24, 34-35, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by de Nora et al. The term "for detecting carbon monoxide" is not given weight. De Nora discloses the claimed invention at col. 4, lines 30-52, where Pt is mixed with the spinel form of $\text{NiCo}_{2.5}\text{O}_4$, meeting claims 34-35. The resistance necessarily increases in the compound when CO is present as it must, since the same composition is employed. The reference sensor of claim 40 is disclosed as the comparative electrode at the top of col. 9.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al. in view of Ito et al. The claimed invention is disclosed except for the gold electrodes. For claim 26, current is monitored to determine the resistance of TABLE 1, as that is the only way to determine same. Ito at col. 3, lines 40-50 discloses gold electrodes as useful for thermistors such as than of Tosaki, for monitoring the current or the voltage, where the device is a thermistor, so that it would have been obvious to employ the gold to monitor the device properties.

9. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al., a et al., in view of Klein et al. Tosaki discloses the claimed invention except for forming the spinel by thermal decomposition of nickel nitrates and cobalt. That method is disclosed at Example 6 of Klein et al for forming the spinel of Tosaki et al., so that such a method would have been obvious to form in the known method. The method is also disclosed at col. 3, lines 29-39 of Bianchi for the same reasons and for using metal substrates. A nickel sheet was employed for the method at the top of col. 10 of Klein to make the thermistor composition of Tosaki et al., and where Ito at col. 6, lines 50-60, or Ito et al. at col. 3, lines 50-56 discloses nickel electrodes as useful for the electrodes of a thermistor, it would have been obvious to use that nickel foil for the purpose of forming an electrode of a known material for thermistors for the purpose of providing current to the device. 4.

10. Claim 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al. in view Bianchi et al. or Klein et al., as applied to claims above, further in view of either Ito et al. or Tosaka et al. The noted references disclose the claimed invention as noted above and as noted here except for the nickel foil. A nickel sheet was employed for the method at the top of

Art Unit: 2832

col. 10 of Klein to make the thermistor composition of Tosaki et al., and where Tosaka at col. 6, lines 50-60, or Ito at col. 3, lines 50-56 discloses nickel electrodes as useful for the electrodes of a thermistor, it would have been obvious to use that nickel foil for the purpose of forming an electrode of a known material for thermistors for the purpose of providing current to the device. For claim 31, the film was sprayed, so that whether or not it is electrostatic spray is not material where the device claimed still has the same nickel material and no allegation of structural difference is alleged.

11. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tosaki et al., as applied to claims above, in view Ando and Duruz et al. Tosaki et al. discloses the claimed invention except as noted above except the method of formation, forming a gel by evaporation of a solution of cobalt and nickel nitrates and drying and heating the gel at the claimed temperatures. Ando discloses forming a solution of the metal nitrates on a substrate at cols. 3-4 in general and employing general methods known in the arts to make same. Duruz discloses using stoichiometric ratios of a nitrate to form the gel method at Example 2, col. 11 in order to obtain a similar NiFe spinel, where drying occurs which includes some evaporation, and then heat treating at 500 degrees, so that it would have been obvious to form the same or similar composition where Ando discloses using known methods in the art and lists mixing nitrates of the two metals of the spinel, and Tosaka discloses the spinel.

12. Claims 32-33, and 38-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Primarily, for claims 32-33, the combination of when carbon monoxide is detected, the resistance of the sensor element increases and the current

Art Unit: 2832

through the sensor element decreases, and when the carbon monoxide exceeds a predetermined level, device emits an alarm or warning, is not suggested or disclosed in the claimed combination. Similar remarks apply to claims 38-39, as noted in the previous office action. That is or further, the preamble is given weight since the limitations breathe life and meaning thereto.

13. Applicant's remarks filed 7/22/4 have been considered but are not persuasive. Without the alarm, the devices noted meet the claim because carbon monoxide inherently must increase the resistance any time carbon monoxide is present in the air since the same compositions are employed. Maki is removed for reasons alluded to in the previous office action, and on a closer reading of same, it appears that the level of the P-type material CuFe_2O_4 similar to that as claimed would otherwise increase the resistance of the device, but does not since it is in a small quantity as compared to In, and Maki teaches away from such a substance for monitoring CO as noted previously. The In and Au of Maki forces the sensor to decrease in resistance as CO concentration increases as Fig.29 makes clear, teaching away from the claimed composition for CO detection as col. 31, line 61-67 discloses, because too much of the claimed composition sufficient to cause an increase in resistance as the CO increases, as claimed, is taught to render the device unstable.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

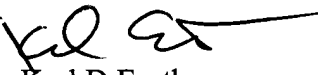
Art Unit: 2832

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl D Easthom whose telephone number is (571) 272-1989. The examiner can normally be reached on M-Th, 5:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Karl D Easthom
Primary Examiner
Art Unit 2832

KDE